

## CLAIMS

What is claimed is:

1. A method for observing object by projection, comprising the step of:  
(a) illuminating object under observation with coherent laser beam;  
(b) receiving the light projection generated by the object under observation with image sensor; the magnified picture being produced by the projected image data obtained by said image sensor.

2. A method for detecting the presence of microorganisms in a sample, comprising the step of:

(a) preparing a light-permeable culture medium mixed with a sample;  
(b) illuminating said medium with coherent laser beam;  
(c) receiving the light projection generated by said medium with image sensor; the presence of microorganisms being detected by analyzing the projected image data obtained by said image sensor.

3. A projection detecting system comprising:

(a) a loading portion for an object under observation;  
(b) a coherent laser beam emitting source which illuminates the object placed on said loading portion; and  
(c) an image sensor which is an array of light sensitive detectors, arranged to receive the light projection generated by said object illuminated by said laser beam and providing the projected image data corresponding to each detector.

4. The projection detecting system as described in claim 3 comprising:

(a) multiple loading portions capable of accommodating many objects under observation in a row;

(b) a coherent laser beam emitting source which illuminates through said objects placed on said

loading portion; and

(c) an image sensor which is an array of light sensitive detectors, arranged to receive the

compounded light projection generated by said objects illuminated by said laser beam and

providing the projected image data corresponding to each detector.

5. The projection detecting system as described in claim 3 comprising:

(a) a loading portion for an object under observation;

(b) three coherent laser beam emitting sources which illuminate said object placed on said

loading portion from X, Y and Z direction which are perpendicular to each other; and

(c) three image sensors which are an array of light sensitive detectors, arranged to receive the

light projection generated by said object illuminated by said laser beams from X, Y and Z

direction respectively and providing the projected image data corresponding to each detector

as X, Y and Z image data.

6. The projection detecting system as described in claim 3 comprising:

(a) a loading portion which holds an object under observation and is capable of rotating said

object with constant angular velocity around center axis that passes through the center of said

object;

(b) a coherent laser beam emitting source which illuminates said object placed on said loading

portion from the direction perpendicular to the axis of rotation;

(c) an image sensor which is an array of light sensitive detectors, arranged to receive the light

projection generated by said object illuminated by said laser beam and providing the projected

image data corresponding to each detector.

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